Dr Charles Mackay's poem
'The Souls of the Children'
at the end of 4th Report of Williams
Secular School.

to show the propriety of sound
[illegible] in Education without Theology

Contents.

Lectures on popular education.
Criminal Legislation.
Notes on the New Reformation in Germany.
National Education.
Science & Religion.
Physiology in common Schools.
The currency question.
Reply to pamphlets on the currency question.
Our Rule in India.
Answer to attack on the Constitution of Man.

All the above by George Combe.

Williams's Secular School in Edinburgh. — Six Reports.
What should Secular Education embrace.

Brought forward,			£227 16 8	
School-fees received during the above period from the children, at 4s. per quarter,		£56 16 6		
Less returned to two boys who were dismissed. . .	£0 5 0			
Deduct teachers' proportion of do. repaid by him,	0 3 4			
		0 1 8		
			56 14 10	
Amount received,				£284 11 6

EXPENDITURE.

Salaries and proportions of fees to Male and Female Teachers and Monitors, from 21st November 1848 to 21st December 1849, . . .	£103 1 3	
Rent of School-house in Infirmary Street to 27th July 1849, and Halls for public meetings, .	10 3 6	
Fires and cleaning school, . . .	9 15 2½	
Paid for school-furniture, . . .	48 8 9	
School-books and stationery, . . .	66 3 3½	
Freight of do. from London, and porterage, .	0 17 9	
Apparatus, &c., ...	7 13 5	
Printing prospectuses, circulars, advertising, postages, &c., ...	15 4 10	
Sundries, towels, dusters, chalk, &c., . .	1 3 0	
Prizes to children, ...	0 18 7	
		£263 9 7
Balance in favour of the School, . .		£21 1 11

Edinburgh, 6th April 1850.—I have examined the detailed accounts, of which the foregoing is an abstract, and compared them with the vouchers, and hereby certify that they are correctly stated, and sufficiently vouched.

GEO. FYFFE,
83 PRINCES STREET.

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REPORT

OF THE

ANNUAL EXAMINATIONS

OF

MR WILLIAMS' SECULAR SCHOOL,

HELD AT EDINBURGH ON THE 29TH AND 30TH JULY,
AND THE 1ST AUGUST 1851.

EDINBURGH:
MACLACHLAN AND STEWART.
LONDON: SIMPKIN, MARSHALL, AND COMPANY.

MDCCCLI.

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WILLIAMS' SECULAR SCHOOL.

TO THE EDITOR OF THE SCOTSMAN.

Edinburgh, 4th August 1851.

SIR,—Having, as a member of the Town Council, taken rather an active part in the project of introducing scientific instruction into the curriculum of the High School, I availed myself of an opportunity of witnessing the result of a trial of that mode of instruction of two years and a half's duration, in Mr Williams' school, which has just been publicly examined. I attended all the diets of examination, which were three—on the 29th and 30th of July, and 1st of August. The first was of the young children under nine years of age, which took place in the theatre of the school in Surgeon Square. The other two were of the senior classes in the Waterloo Rooms. Both were attended by numerous audiences. I will now, for the public good, offer a fair and impartial account of what I witnessed.

The younger children acquitted themselves in a manner which I have not seen surpassed by children of their age, in reading, in a general object lesson on the subject of a book, in which they displayed a considerable amount of intelligence of the properties, construction, &c., of the various materials of which books are composed, and of the various modes, ancient and modern, which have been adopted for the diffusion of intelligence; and they evidently appreciated the great advantages derived from the modern printing press.

They also evinced considerable knowledge in the rudiments of anatomy and physiology.

At the successive examinations in the Waterloo Rooms, the pupils of the senior divisions were examined in reading, grammar, mental arithmetic, and algebra. In geography, they were examined upon the form of the earth, gravitation, effect of the earth's rotation, nature of the earth's crust, character of rocks, effect of rivers in wearing away their banks, the deposition of new land by the formation of deltas, the mode of calculating the amount of debris carried down by rivers within a given time, the laws of evaporation, condensation, radiation of heat, effect of the earth's position towards the sun in reference to temperature, climate, &c., effect of the present distribution of land and water in rendering various parts of the globe habitable. During the course of this portion of the examination the children evinced a considerable knowledge of the applied sciences, and appeared to be intimately acquainted with the situation of the various seas, countries, and localities marked out in the map of the world. In the examination upon the science of chemistry, a colourless solution consisting of a mixture of several substances was produced and exhibited to the pupils, who dictated the course of analysis to be pursued, by which the presence of ammonia, barytes, iron, and silver was determined, and the absence of all other basis demonstrated. During the course of the analysis the results of the manipulations dictated by the pupils were registered on the black board by one of the pupils, who wrote them down in the symbolical language of modern chemistry. In physiology the children were examined upon the composition of bone, the structure and uses of the skeleton, the names of the bones of which it is composed, the structure, modes of attachment, and uses of the muscles, the structure and functions of the stomach, liver, intestines, heart, lungs, arteries, veins, &c. The children explained the operation of the iron contained in the blood upon the theory propounded by Justus Liebig. They also explained the prejudicial action of alcohol upon the human system, and showed that they clearly understood the importance of cleanliness and temperance as a means of health.

Phrenology was treated as the physiology of the brain and nervous system. The children were examined upon the structure and functions of the brain as the organ of the mind; on the situations and functions of its various parts as connected with particular mental faculties, &c. In order to ascertain how far they were capable of applying the principles of phrenology viewed as mental philosophy to the guidance of human conduct, they were questioned upon the subject of the Peace Congress, and said that human happiness, to be permanent, must be based upon the supremacy of the intellect and moral sentiments over the animal propensities; that aggressive war being based upon the predominance of the animal propensities could confer no real and permanent happiness; that war tended to destroy wealth and human life, and is therefore opposed to the teachings of phrenology, social economy, morality, and religion; that the Peace Congress, by labouring to abolish aggressive war, deserved our respect; and that if these principles had been properly taught to all the children in England and France for the last fifty years, war between them would have been rendered highly improbable.

They were also questioned upon the bearings of phrenology upon other subjects of social and domestic importance.

In social economy they were examined upon the nature of wealth and capital, the importance of economy, skill, and industry, the nature of profit, duty of capitalists, &c. In the course of the examination the children manifested a clear apprehension of the general facts, that without capital there could be no progress; that it is a duty imposed by nature on man that he should economise, since he lives not upon the produce of his present but of previous labour; that the amount of profit earned by the capitalist is a general index of the amount of good effected by him; that one of the greatest evils which the capitalist could inflict upon the labouring classes, would be to withdraw his capital, by which they would be rendered unable to earn their respective livelihoods, and would consequently starve; and that it is a duty established by nature and binding upon all, labourer and capitalist alike, that each one should work to do some good, in order that the community may benefit by his existence.

All this took place for about three hours continuously, in presence of audiences attentive, engrossed, and evidently delighted, beyond what we usually see in attending a school examination. I was myself satisfied that success beyond expectation had attended the experiment. It was stated that the examinations were on points not specially prepared, but, on the general knowledge of the several branches of science mastered by the pupils, and this was evident from the nature of the questions and the answers. Indeed, Mr Combe repeatedly broke in, in the middle of a subject, and pursued a long series of questions, and then transferred the pupils again to Mr Williams. On the subjects of chemistry, mechanical science, physiology, mental science according to phrenology, and social economy, few adults in the room, I venture to say, possessed the same degree of knowledge evinced by these children.

I for one would be perfectly contented to see boys as well informed, when they leave the High School to go to College, or commence the business of the world. There was no appearance of cramming or roting from memory, and the elder girls were nearly as well instructed as the boys. Their physiological knowledge alone, were it general, would improve a whole generation of mothers in the care of the health of their children. From no part of the examination did I derive more hope for the improved sanitary habits of the people than from this. It would, too, have been worth the while of sceptics in phrenology to have heard the use the children made of it in analysing human conduct.

Their demonstration that the objects of the Peace Congress, for example, are in harmony with the right use of the human faculties which Divine wisdom has rendered essential to human happiness, was singularly interesting and impressive. The experimental suggestions of the pupils in chemistry made many present conscious, I am pretty sure, of their own ignorance on that subject; whilst in social economy their ready answers and prompt and reflective reasonings on capital and wages, production and distribution, &c., were of the best augury for their judicious conduct in the callings of their after life. It was impossible to see and hear these young people, refined as they are in appearance and manners much beyond their rank in life, without being persuaded that they will much improve their condition in whatever line they may engage. I cannot conclude without adding that a reverential and religious sentiment and tone pervaded the whole examination, treating, as it avowedly did, the whole facts and laws of science as so many examples of Divine power, wisdom, and goodness towards man. Instruction in the special religion of their own denominations is left to the parents and pastors of the children.

The great importance of this subject must be my apology for asking you to give my letter a place in your paper.—I am, &c. WM. BELL.

having affixed to it, in prominent array, the signatures of "Paul Cullen, Archbishop, &c., Primate of all Ireland;" of the three other Roman Catholic archbishops, with the titles of the respective sees of Dublin, Cashel, and Tuam; and of Drs Cantwell, Haly, and Foran, with the ecclesiastical titles of Meath, Kildare, and Waterford, severally attached to their names. The document is an "Address of the Archbishops, Bishops, Clergy, and others, composing the committee appointed by the Synod of Thurles for founding a Catholic University in Ireland to the Catholic clergy and laity of England." [The document was issued, or at least dated, before the passing of the Act.]

The opening of the Midland Great Western Railway to Galway took place on Friday, without any attempt at ostentatious display or festivity.

In the last *Dublin Gazette* is inserted a notice of certain bequests which have been left in trust to three of the Irish Roman Catholic Bishops, the titles of whose sees are identical with those of the Protestant Church; among them that of Paul Cullen, R.C. Archbishop of Armagh. The Prelates have signed the official document in the official *Gazette* of the Government with the forbidden titles.

THE NEWSPAPER STAMP QUESTION THE PRESS ON THE COMMITTEE'S REPORT.

(*From the Glasgow Citizen.*)

Those patriots must be woefully in want of a grievance who persist in denouncing the newspaper stamp as a tax on knowledge. We shall probably have something to say next week in reference to the preposterous recommendations of the recent Parliamentary committee on the subject. In the meantime we are glad to observe that the *Scotsman* and other leading journals have come promptly forward in defence of the excellent penny stamp, whereby newspapers are transmitted, and again and again retransmitted through the Post-office, in the cheapest and best possible way, and, indeed, at an annual sacrifice to that establishment of not less than £30,000. We cannot for a moment believe that the touch clique who have been clamouring for the abolition of the stamp have any real chance of success. Nevertheless we hold it to be the duty of journalists in all parts of the kingdom to be on the alert, and to protest, in the strongest t ey can command, against the mischievous blow w aimed at the general newspaper press.

(*From the Aberdeen Herald.*)

As we participate fully in the "unreasonable more properly, reasonable "impatience of t ion" attributed to Englishmen generally, and w no objection to find ourselves placed in the exempt" list, we ought, perhaps, to be overjoy a report just issued by a committee of the Ho Commons, recommending the abolition of t wspaper stamp. We must confess, however ut we never could look on the removal of t post, in any way that has yet been suggested a boon either to ourselves or the public. ere is certainly nothing in the document bef s to lead us to alter our views. Its facts vidently very one-sided, and its arguments, ey deserve the name, are wholly inconclusive he broad question is mixed up with a mass tty details; and slight anomalies, which hav itherto been put right without much difficulty r ought forward as reasons for a fundamental hange, which may injure the character of th ress, but cannot, by any possibility, render sub antial benefit to the public. . . .

We have always maintained, and are prepared to do so still, that, by promoting the ci irculation of newspapers throughout wid readth and length of the kingdom, the newspap tamp aids materially in breaking down loca rejudices, and building up a healthy national eeling. If every little burgh or district were to raw its chief supply of mental food from so etty source within itself, it would soon be tself in confined notions and local squabbl nd the enlargement of thought which proceed rom an intimate acquaintance with what doing and saying in other parts of the country would be suddenly checked. . . . B aying a postage, all this, of course, could o done to some purpose, but not so well a present; for not only would there be a stron temptation to be content with the local journa but the number of exchanges of second-han apers between friends at a distance would b greatly reduced. To what an extent this is car ried on at present, may be gathered from the f hat, in our own case—and the *Scotsman* s he same of himself and other contemporari t is difficult to procure a copy of the *Heral* Aberdeen after it is eight days old, notwithstan ng the number issued. Three-fourths at le f our circulation, after passing through seve ands, is despatched by the original subscriber ast reader, either to a distant part of the countr r to a friend abroad. It is no uncommon thing indeed, for a paper to be well thumbed by least half-a-dozen of readers in the town, the despatched to the country, and finally sent t same town in the south or place abroad. . . . But is not the penny stamp an oppressive tax? We answer, No. It is neither excessive in amount, nor unjust in operation. It is only a very moderate equivalent for work done, and anything like partiality in its exaction is so trifling and counterbalanced by so much good that it ought not, for a moment, to be thought of.

A Harmless Toy.—The Duke of Bordeaux has received from Paris the present of a magnificent crimson velvet throne, sumptuously embroidered in gold and surmounted by the Crown of France.

Monument to Wordsworth.—Shortly after the death of Wordsworth, a committee was formed among his friends and more immediate admirers for the purpose of setting up a tablet to his memory in Grassmere Church, where the poet lies buried. The work, the execution of which was intrusted to Mr Thomas Woolner, has now been completed. Surmounted by a band of laurel leaves is the inscription, written by Professor Keble; under which the poet's head is sculptured in relief. The likeness to the man has received decisive praise from persons whose verdict is final; the intellectual likeness to the poet will be more widely appreciated, and recognised with as cordial an admiration. The meditative lines of the face, the thoughtful forehead and eye, the compressed, sensitive mouth, are rendered with refined intelligence. In two narrow spaces at each side of the head, are introduced the crocus and celandine, and the snowdrop and violet, treated with a rare union of natural beauty and sculpturesque method and subordination.—*Spectator.*

Shabbiness in a Sheriff.—The assizes at Newcastle were opened last week by Mr Baron Platt. On this occasion, instead of the very handsome equipage with which former High Sheriffs of this county have usually escorted the Judges, a very plain if not shabby Clarence carriage, without any ornament whatever, and having a rumble behind, in which were two footmen in plain liveries, was the only parade, if it can be so called, which was awarded to the judges. Mr Baron Platt seems to have felt this as an indignity, for his Lordship, in his address to the grand jury for the county, remarked, "I cannot leave you without expressing my great regret that in this great country, and in this great county of Northumberland, the gentry are so reduced as not to show the ordinary respect and loyalty to the Crown. It is not merely as judges that we come here. We are ministers under the royal commission. We have the honour to attend before you under the commission or sign manual of her Majesty; and in this coun-

REPORT.

The Examination of the Junior Pupils took place in the amphitheatre of the school on the morning of Tuesday, 29th July, in presence of Mr Combe and Mr Simpson, the Promoters of the School, and a numerous assemblage of the parents of the children, and other visitors.

Before commencing the examination in reading, Mr Williams explained that an experiment had been made during the last session, of teaching the youngest children to read through the Phonetic System. One of the most serious obstacles to the extension of education in this country arises from the difficulties of English orthography. On account of the variable and arbitrary value of the letters of our alphabet when combined to form words, nearly half the period devoted to school, by the children of the working classes, is spent in merely learning to read and spell. Thus, the letter A has 8 meanings; E has 8; I, 7; O, 12; U, 9; Y, 3; C, 6; J, 5; T, 5; X, 5; Z, 4, &c., and not one letter has a fixed value. The whole 26 letters represent 117 sounds, thus averaging 4½ each; and no rules can be given to determine, with any degree of certainty, when they shall represent one and when another of these sounds. Simple sounds are represented sometimes by one letter, sometimes by another, frequently by most inconsistent combinations of letters, and this in so arbitrary and variable a manner as to render reduction to general rules impossible.

In consequence of these complications in our orthography, double the time is consumed in learning to read English that is required in the schools of Germany and Italy to learn to read in the languages of those countries; for in the German and Italian the letters of the alphabet have nearly a fixed and uniform value.

The Phonetic alphabet consists of 40 characters, each having an invariable value, and representing one of the elementary sounds, by the combination of which all English words are formed. In teaching them, they are named by the sounds they represent; and thus to spell a word is but to pronounce it slowly and analytically. Under this system no letter ever changes its value, and no word can be spelled in two different ways. All the characters of the common alphabet are used in the phonetic alphabet, and their most frequently occurring signification in the common orthography is the one they represent in the phonetic. The additional phonetic characters very closely resemble the common letters, so that the words formed by them are very similar in shape to those commonly used. It is upon this resemblance that the application of the phonetic system, as an introduction to the common reading, depends. The fluent reader does not spell the words as he reads, but recognizes each word as a whole by its shape; and it was stated by the inventors and advocates of phonetic spelling, that children might be taught to read phonetically in one-third or one-fourth of the time required to learn the common spelling, and that from the resemblance in shape of the words of the one system to those of the other, the transition from the phonetic to common reading would be very easy.

The experiment above referred to was instituted with the view of testing the correctness of this statement. Accordingly, the parents of a few of the children were consulted, and, their approbation having been given, a small phonetic reading class was commenced in September last, composed of children from four to five years of age, and just beginning to learn to read. There was in the school another class composed of children from one to two years older, who, a twelvemonth before, had begun learning to read on the old system. In about seven or eight months, the children of the phonetic class could read books printed in the phonetic type quite as well as these latter children could read books printed in the usual type. The phonetic class had decidedly the advantage of the others in correctness of pronunciation, as well as in the interest they exhibited in the mere act of mechanical reading and spelling; for spelling long words was to them merely building them up out of the elementary sounds the signs represented, and when they rightly applied the few simple rules they had learned, they were never disheartened by failure; reading and spelling being, in fact, rendered purely synthetical and analytical exercises as regards sounds. At the end of the eighth month the phonetic class commenced common reading. They were at first assisted by the use of similar lessons printed in the phonetic characters with which they were familiar; but the phonetic key was gradually dispensed with as they became able to read without it. Before the close of the present session, the phonetic class had overtaken, in common reading, the other, which had been about double the time engaged in that study. This result was exhibited to the audience by the phonetic class having first shewn their attainments in phonetic reading and spelling, and then in common reading; and then the other class above referred to having read from the same book, it became evident that the phonetic class could read quite as well as the other.*

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* In consequence of the success of this experiment, it is proposed in future to teach all those children who commence their education at this school to read phonetically for the first twelvemonth at least, and then to pass them on to the common orthography, when their intellectual powers have been sufficiently trained, by the logical method of phonetic spelling, and the object-lessons they receive, to comprehend the common system.

After the other classes were examined upon reading, an object-lesson on a book was given, to shew the manner in which the children were made acquainted with familiar objects. They were questioned upon the physical qualities of the book, and its component parts; upon the manufacture of paper, and upon the substitutes for paper used by the Egyptians, Greeks, Romans, Anglo-Saxons, and the Chinese. In their answers they described the mode of manufacturing paper from the papyrus, from the bark of trees, from leaves, from rice,—the use of wax, ivory, and metal tablets, and parchment,—the kind of books used by the ancients and in the middle ages,—the cost of books before the invention of printing,—the history of the invention of printing and its introduction to this country, and the advantages we derive from it,—the importance of learning to read and being able to use books, and of education generally.

They were then examined upon Geography, when they pointed out the situations of the various countries, seas, rivers, mountains, &c., on the Map of Asia, and the counties, chief towns, and rivers of England.

They were next questioned upon the subject of Physiology, the rudiments of which had been taught even to the youngest children. They named most of the bones of the skeleton, and the different kinds of joints, the uses of the bones and the muscles generally, the principal organs concerned in digestion, and the more striking physical changes the food undergoes during its conversion into blood. This part of the examination was conducted chiefly by William Mason, and that on Geography by James Lambert, both boys between 14 and 15 years of age, who have been pupils at the school from about the commencement, in December 1848, and have lately been articled as pupil teachers.

The needle-work and specimens of knitting done by the girls, under the instruction of Miss Louisa Watkins, were then exhibited and examined, and elicited the approbation of the mothers, and that of the lady-visitors.

The Second Examination took place in the Waterloo Rooms, on Wednesday evening, July 30th, in presence of the Promoters of the School and above 200 visitors.

The whole of the pupils in the school are classified into four divisions, the first being the youngest, and the fourth the most advanced. On this occasion, the third and fourth divisions were examined, the first and second having been examined on the previous day. The examination commenced by the children of both the third and fourth divisions reading some of the historical portions of the "Daily Lesson Book" of the British and Foreign School Society.

The third division was then examined on English Grammar by Mr Angell (formerly teacher of chemistry at the London Mechanics Institution, and chemical assistant to Professor Graham, of University College, London), who had been, during the last three months, engaged in teaching this division. A proposition was written on the black board, which the children parsed.

The fourth or senior division was then examined on the practical application of the principles of English Grammar, by reading some of Murray's Exercises, correcting the false syntax, and explaining their reasons for making the corrections.

Mr Williams next proceeded to examine both divisions on Mental Arithmetic, explaining that the questions were taken at random from among some thousands of such questions in the two parts of M'Leod's Mental Arithmetic. The children went through several mental exercises on the first four arithmetical rules, and some complicated and difficult questions in ratios, proportion, and fractional arithmetic. A problem producing an algebraic equation was taken at random from a collection of such questions, and worked by one of the elder pupils on the black board.

The upper division was next examined by Mr Williams on Geography, and the application of the principles of Natural Philosophy to the elucidation of geographical phenomena. They were first questioned upon the form of the earth—on the form which a semi-fluid or viscous mass rotating as the earth does would assume. They answered, that it would become an oblate spheroid, such as the earth actually is, and explained the action of the centripetal and centrifugal forces by which such a form would be attained. They were then asked what would result if the crust of the earth were quite unyielding and of a truly spherical form? The whole ocean would be accumulated between the tropics, and the land would be found around the poles. What kind of climate should we have upon the earth in such a case? It would be so cold as to be uninhabitable.

They were then questioned upon the climate of different parts of the earth, and they explained the influence of the varying degrees of obliquity presented by the earth's surface to the rays of the sun upon mean temperature. They were asked whether all countries in the same latitude had similar climates? and Edinburgh and Moscow in the same latitude and the same hemisphere were taken as illustrations. In reply to several questions on this part of the subject, the children explained that the equable climate of Edinburgh, as contrasted with that of Moscow, was attributable to our insular position,—that the properties possessed by water of acquiring its greatest density at about 40° of temperature, and of rendering latent about 1000° of heat when converted into vapour, and the greater powers of absorbing and radiating heat possessed by the land, are the causes of this. In answer to further questions, the children showed how these causes act in producing these phenomena.

At the suggestion of Mr Combe, the children were then tried upon their topographical knowledge. The map was removed from the children too far for them to read the names, and on Mr Williams pointing to the different countries, seas, straits, rivers, &c., upon it, these were named by them immediately and correctly.

The children of the upper division were then examined upon Chemistry; previous to which Mr Williams explained that, from the extent of the subject and its applications, it would be impossible to include more than a very small portion of it in the examination; but in order to make that afford a tolerable trial of the general knowledge of chemistry possessed by the children, he had prepared a solution containing a certain number of salts soluble in water, the children being totally unacquainted with what these salts were. Mr Williams then, shewing the solution, asked them how he was to proceed in order to analyze it. They stated what reagents should be applied, and how, and under what circumstances. In every case where no result was produced, and the absence of any substance or group of substances was thereby indicated, the children explained what would have taken place if the substances sought for had been there; and when a reaction was produced indicating the presence of anything, the rationale of the action was explained by them. During the analysis, one of the children registered on the black board the results of each experiment, using the chemical symbols, the whole class being occasionally called upon to explain these symbols.

At the end of the analysis, ammonia, barytes, and the oxides of silver and iron were proved to be the substances that were present in the solution. Mercury, lead, bismuth, cadmium, copper, gold, platinum, antimony, tin, arsenic, cobalt, nickel, manganese, zinc, chromium, alumina, magnesia, lime, strontian, potash, and soda, were proved to be absent.

Mr Williams then alluded to the advantages of the chemical teaching in affording the children a key to the operations of nature, whether in the earth, or the waters, or the atmosphere; in the physiological phenomena of animals and vegetables, and the thousands of manufacturing processes in which chemical action plays an important part; and stated that, besides these, the course of instruction gone through in chemical analysis was a strict course of logic, not merely theoretical formal logic, but the severest process of reasoning practically applied in the conducting of actual investigations. He said that a single fallacy would betray itself in confusion and failure, which, being physically indicated, would be most palpable to children. It was added, that chemical analysis affords peculiar advantages in this respect, since nothing need be taken for granted. All the data upon which the analysis is based may be exhibited experimentally with but a very moderate amount of apparatus; and being all simple physical phenomena, children of twelve years of age can understand them as well as men of forty or fifty, or of any age whatever.

This concluded the examination of the evening. Mr Combe and

Mr Simpson having shortly addressed the audience, Councillor Bell rose in the middle of the room, and after expressing his high gratification with the attainments of the children, proposed a vote of thanks to the Promoters of the school, which was carried by acclamation.

The concluding Examination of the elder pupils (consisting of the third and fourth divisions, as in the last examination), took place in the Waterloo Rooms, on Friday evening, the 1st of August, in presence of the Promoters, and an audience exceeding 250 persons.

The third division was first examined in physiology by Mr Angell. A skeleton and various anatomical diagrams being presented, they were questioned upon the composition and properties of bone; the alteration of form and shape of bones effected by pressure during the earlier periods of life, when the proportion of the gelatine to phosphate of lime is greater than in later life; on the names, structure, and functions of the bones forming the skeleton, their mode of attachment by ligaments, &c. They were required to distinguish and name those bones which serve principally for the purpose of protection to the more important organs of the body, and those which serve chiefly as the media of attachments for muscles. They explained the structure and functions of the muscles, their mode of action, &c.; and the processes of digestion and nutrition, by which the waste of the tissues consequent upon the muscular and general action of the body, is repaired.

Commencing with the operation of the teeth, tongue, cheeks, salivary glands, &c., in the process of mastication, they went on to explain the action of the tongue, pharynx, and muscular coats of the œsophagus in the act of deglutition; the passage of the food down the œsophagus into the stomach. They explained the general structure of the stomach, and the process by which the food is converted into chyme, and transmitted to the pyloric valve. They described the action of this valve in rejecting the undigested food, while it allows the chyme to pass into the duodenum, into which is poured the bile and pancreatic juice, secretions effected respectively by the liver and pancreas. They further explained the process by which the chyme is gradually converted into chyle, the passage of the chyle along the smaller intestines, and its gradual absorption by the lacteals, and passage through them into the mesenteric glands; and the manner in which it is conveyed to the thoracic duct, is poured into the subclavian vein, and mixes with the venous blood, which is passed into the right side of the heart, transmitted to the lungs, and returned to the heart purified and arterialized: also the passage of the blood out from the heart by the aorta and arteries into the capillaries, where the construction of the bone, muscle, nerve, ligament, membrane, and tissue, of which the body is composed, is effected.

They also briefly described the action of the lymphatic vessels, in absorbing the waste materials, superfluous fluids, &c., of the body, and conveying them to the venous blood in the veins, from which they are separated and thrown out of the body by the action of the skin, lungs, kidneys, and other excretory organs.

Mr Williams then proceeded to examine the children of the fourth division upon those vital processes for the comprehension of which a knowledge of the facts and principles of chemistry is more specially required. The elder children explained the structure and functions of the lungs, and the mode in which the oxygen of the air acts upon the venous blood in the lungs, through the substance of the membrane of the air-cells. They proved the evolution of carbonic acid from the lungs by breathing through a small tube into a glass vessel containing lime-water; the solution, at first perfectly transparent and colourless, became speedily white and turbid from the deposition of the insoluble carbonate of lime, or chalk, produced by the union of the carbonic acid evolved from the lungs with the lime contained in the solution.

They explained that the chemical changes in the blood constitute the source of animal heat, being in fact a slow combustion taking place in the capillary vessels distributed 'through every part of the animal frame. The theory that the heat is evolved by action going on through the whole of the frame, accounts for the equable temperature which prevails over the body ; while, by the theory formerly adopted, the heat was supposed to be generated in the lungs and diffused from them as a centre over the rest of the body. Were this true, the lungs would be hotter than the rest of the body, which is not the case.

They were then questioned as to the source of the iron which constitutes an important ingredient of the blood, and answered that it is derived from the food, animal and vegetable ; that almost all rocks contain a small quantity of iron, frequently so small as to be barely distinguishable in analysis, and the soil which is formed by the disintegration of rocks is always found to contain a small trace of iron. In confirmation of this they referred to an analysis they had recently made in the school of some pieces of rock from Salisbury Crags.

They were then asked whether the other metals, such as copper, silver, gold, zinc, nickel, lead, tin, &c., were distributed in this manner ? No, they are found accumulated in certain localities, while large districts are entirely without them. What would result if iron were distributed in like manner ? Vegetables and consequently animals would be able to exist only here and there on small spots of the earth ; the greater portion would be quite uninhabitable. What would result if iron were distributed in the same manner as silica, alumina, lime, and the earths generally, that is, forming a large proportion of the whole bulk of rocks ? The earth would, in like manner, be uninhabitable, for large quantities of iron in the soil would destroy its fertility. This subject was thus extended in order to shew how every step made in the advancement of human knowledge reveals fresh illustrations of the exquisite wisdom with which every part of the universe has been adapted by its Creator to the rest. Until recently, the trace of iron found in rocks was set down by chemists as an accidental impurity.

The knowledge of the principles of physiology and chemistry was next applied in tracing the effects of bad air, drunkenness, over-feeding, under-feeding, dirt, and other immoral habits, in such a manner as to lay the foundation of sanitary observances in later life.

Mr Combe then examined the upper division on Phrenology. Pointing to a diagram, he asked, What does this represent? The brain. The children then traced the connection of the nerves of all the senses and the spinal cord with the brain. He next contrasted the brain of an idiot, very small in its dimensions, with a larger brain of a healthy individual—both adults. Who made the brain? God. Who instituted its functions? God. Do you expect to find indications of his wisdom and goodness in the structure and functions of the brain? Yes. Do you feel that there is a brain within your skulls? No. Did you see any thought or feeling in the brain which you saw dissected? No. By what means, then, have the uses of the different parts of the brain been discovered? By comparing the power of manifesting particular faculties with the size of particular parts.

Mr Combe then examined the children on the general structure of the brain, and its connection with the spinal cord. They described the columns for motion and those for feeling, and traced both sets of nerves to their expansions in the muscles and skin.

He pointed to successive parts on an unmarked skull, and the children indicated the cerebral organs which lay beneath.

They were questioned on the uses and abuses of the various animal propensities, moral sentiments, and intellectual faculties.

Has God conferred bad functions on any of the mental organs? No; they have all right uses, but they may be abused. When do the faculties act rightly? They do so when they all obey the moral, religious, and intellectual faculties.

Three casts of heads were then shewn to the children. In the first, the organs of the animal propensities were very large, and those of the moral sentiments and intellect deficient. The children described this combination of organs as accompanied by strong tendencies to animal indulgence, with feeble restraining powers. In the second, the organs of the animal propensities, those of the moral sentiments, and of the intellectual faculties, were all large. The children described this combination as accompanied by a liability to be greatly influenced by external circumstances: with immoral companions, the individual would be prone to indulge his propensities; if placed amidst moral, religious, and intellectual associates, he might restrain his propensities, and be a virtuous man. In the third, the organs of the animal propensities were moderately developed, and those of the moral sentiments and intellect were decidedly large. They described individuals of this class as favourably constituted, having great moral, religious, and intellectual powers, with comparatively feeble tendencies to abuse their faculties.

The necessity for educating and training every faculty was then shewn.

On the first class, the influence of education would be smallest, on account of their deficient powers. The more highly gifted should assist, direct, and, if necessary, restrain, this class.

Education and training would produce a great effect on the second class; it might determine their character for good or evil through life.

The third class would profit exceedingly by education and training; and from their high gifts, it is their duty to instruct and assist their less fortunate brethren. The numbers of the first class were small; those of the second considerable; and those of the third numerous.

Various questions were then put to the children to test their power of applying phrenology in the analysis of characters and actions. Among others, the principles involved in the proceedings of the Peace Congress were analysed. Why do nations engage in war? To gain something. What do they expect to gain? Wealth, territory, or glory. What faculties desire wealth and power? Acquisitiveness and Self-Esteem. What faculties desire glory? Love of Approbation, Self-Esteem, and Ideality. What other faculties do these call in to assist them in gaining these objects? Combativeness, Destructiveness, and Intellect. What is the source of wealth? Skill and industry. What faculties are necessary to acquire wealth by skill and industry? Acquisitiveness, the moral sentiments, and intellect. What do nations do when they go to war? Enlist men to fight. Do they feed and clothe them? Yes. Arm them? Yes. Does this cost money? Yes. Where does the money come from? From taxes paid by the people. Where do the people get the money with which to pay the taxes? They work for it. If they did not pay it in taxes for war, might they save it? Yes. Then if France raise, feed, clothe, and arm 250,000 men out of the taxes, will the people of France be richer or poorer? Poorer. If England raise, feed, clothe, and arm as many men to meet the French, will her people be richer or poorer? Poorer. When the armies meet what do they do? Fire powder and shot, and kill and wound each other. Do the powder and shot cost money? Yes. Do they produce any good? No. They serve to kill and wound men. Is war then a natural means for gaining wealth? No; it injures the people. You said that nations go to war to gain glory, and that the love of glory comes from Love of Approbation, Self-Esteem, and Ideality. When these faculties use Combativeness and Destructiveness to gain glory, is this a use or an abuse of them ? An abuse. Does an abuse of any of our faculties lead to lasting happiness ? No ; to misery. If, then, a nation desires to increase the employment of its people, their wealth, and their general enjoyment, is war a good way of doing so ? No ; it has contrary effects. With what faculties should Love of Approbation, Self-Esteem, and Ideality act in combination, in order to obtain true and lasting glory ? With the moral sentiments and intellect. Suppose the French should try to make the greatest discoveries in science,—to make the best silks and velvets, the most perfect clocks, the most beautiful and useful furniture, and beat the English in these, would this glory injure France ? No ; it would benefit her people. Would it injure England ? No ; because she might buy these fine things, or make as good, or better, if she could. If the French and English strove which should excel the other in arts, science, learning, civilization, and virtue, would they benefit or injure themselves and each other ? Benefit both. Does man desire happiness ? Yes. Has God so arranged the world and so constituted the human faculties that happiness may be reached without abusing the faculties ? Yes. By which means—by seeking it from the animal propensities, or from the whole faculties governed and directed by the moral sentiments and intellect ? By the latter. If, then, war leads to waste, and waste to poverty, and if an abuse of the faculties does not lead to true glory, is war necessary to human welfare ? No. If every person in France saw it in the light you do, would they desire it ? No. If every one in England viewed it as you do, would they engage in it ? No. Are the members of the Peace Congress, then, acting foolishly in trying to convince the people of France and England of the truth of what you have said in regard to war ? No—wisely. But suppose the French cannot be convinced, and make war on England, should we submit ? No—we should refer the question in dispute to some one to decide who is wrong. But if the French refuse to refer the point, and insist on fighting—what then ? England must defend herself. Is a defensive war, then, justifiable ? Yes. But does reason say that aggressive war is necessary ? No. Does morality say so ? No. Does true religion say so ? No. What then, says so ? The animal faculties untrained and uninstructed in their true interests. Is it a mark of superior knowledge and wisdom to say that the world cannot go on without war ? No ; it indicates ignorance and a remnant of barbarism in the feelings.

Mr Williams then put a few questions to the girls exclusively, in order to test their powers of applying phrenological principles. He asked them which of the faculties were active in inducing them to put on their best clothes to come to the examination, or to go to a party ?

They answered, Love of Approbation, and Self-Esteem; and besides these, the sentiments of Ideality, Benevolence, Veneration, and Conscientiousness might influence some individuals. In answer to other questions, they explained the manner in which the moral sentiments may exert their influence in such cases; Ideality, by giving the pure love of the beautiful for its own sake; Benevolence, the desire to afford gratification to others through their Ideality; Veneration, by a desire to shew their respect to those present; and Conscientiousness, when they knew that in doing all this they were acting rightly and dutifully.

They were then asked whether this combination of feelings always operates in furnishing young ladies with motives for putting on their best clothes, and looking as well as possible? They answered, sometimes the leading motive is to outshine their companions, and gain all the admiration to themselves. What faculties act in this case? Love of Approbation and Self-Esteem without the moral sentiments. Is this right? No. They then compared the consequences of obeying and disobeying the moral laws by supposing the case of two young ladies going to a party, one under the influence of the Moral Sentiments, and the other governed by Love of Approbation and Self-Esteem: they stated that the first would be delighted with the good looks and cheerfulness of her companions, and would share the happiness of all around her, and return home enjoying the most agreeable recollections and reflections; while the one who went to gain great admiration would almost certainly be disappointed; because the lower feelings when acting alone, expect more than it is usually possible to obtain: besides, she would suffer painful vexations if others attracted more attention than herself.

They were then asked what they should do if at any time they found themselves falling under the influence of the unregulated action of the lower feelings? In answer to this and other questions, they replied that they should call up the moral sentiments to control the lower feelings, and that this may be done by directing the mind towards those objects and ideas which are naturally related to the moral sentiments and excite them to action; that the phrenology they had learned enables them to analyse the motives of their own actions, and teaches them the means of regulating them according to the moral laws.

They were then asked, Which is the best time for learning phrenology, and thus applying it, whether while they are children or after they arrive at maturity? While they are children, because their brains are now growing, and the faculties most exercised will be the most strengthened and developed as they advance to maturity.

The upper division was next examined upon Social Economy. After defining the nature of wealth and capital, wages, profit, &c., and shewing that civilization cannot advance without the accumulation of considerable wealth, and that, from the natural laws of man's organization and the physical constitution of external nature, we are compelled, while labouring to produce wealth for the future, to subsist upon the produce of the past labour which has been collected and saved by somebody, and which, when thus saved in order to support us while producing more, constitutes capital,*—they were asked whether the possession of wealth justifies any one in abstaining from productive industry? To this they replied, No: since all wealth is the produce of industry, and no man can live without consuming wealth, the unproductive consumer, whether rich or poor, is diminishing the wealth already in existence by the total amount he consumes. Have we done our duty when we have produced just an equivalent to what we consume? No; for when we came into the world we found a great quantity of wealth accumulated, such as cities, roads, reclaimed lands, a vast fund of knowledge, &c., without which we must have been mere savages; and since all these were bequeathed to us by those who came before us, and we have used them, we are bound in justice to add something to the common stock, and leave the world somewhat better than we found it.

If in a community of 1000 men, all of whom work, only 100 save, what would be the consequence? The 100 would become capitalists, and the 900 remain labourers dependent for their present subsistence upon the savings of the capitalists. In answer to other questions, the children said that the capitalists might either distribute these savings gratuitously among the labourers; or might give it to them as wages, taking in return an exact equivalent of labour; or, thirdly, they might give it to them as wages for an amount of labour which would return the capital and leave a surplus as profit: That, in the first case, all would soon become destitute, as the savings would soon be consumed without return; in the second, the stock would remain stationary or more probably diminish, since the return would be only just equal to the wages paid, and the capitalist would have no motives of self-interest to induce him to continue saving; while, in the third case, the stock of the capitalists would be increasing, and the opportunity thus afforded of gaining wealth would be an additional motive towards inducing all to save. What kind of power is that which the capitalist has over the labourer? The power of rescuing him from the natural results of his own destitution of capital.

What is the greatest injury the capitalist can do the labourer? To consume his capital in unproductive enjoyment, and thus cease to be a capitalist, and thereby become incapable of employing labourers and paying wages.

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* The questions and illustrations upon this part of the subject were nearly the same as those used at the last examination: for a detailed account of which see the Report of that examination published in the Appendix of the Second Annual Report of the School.

If all the capitalists were to do this, what would become of the community? They would all become destitute, being unable to subsist until their present labour had yielded its result in an available form. Who are the best fitted to be entrusted with the store upon which we are all living while producing more,—those who have saved or those who have neglected to save? Those who have saved. What result are we justified in expecting if the opposite principle of distribution were carried out? That the store would be diminished instead of increased, and thus all would suffer.

In reply to further questions, they stated, that it is not desirable that a few should possess all the capital and the rest none; but that, to secure a distribution of it, there must be a corresponding distribution of the qualities which acquire and preserve it, namely, skill, industry, morality, and economy. What then is the best remedy for the evils attending the unequal distribution of wealth? To teach the labourers the laws regulating the production and distribution of wealth and capital, and train them in attaining the qualities necessary for becoming capitalists themselves as well as labourers.

In reply to further questions, they stated that a man in earning his livelihood, either as a labourer or as a capitalist, is obeying the natural laws of social existence instituted by his Creator, and at the same time that he benefits himself, is doing his part towards supplying the necessities and furthering the happiness of his fellow-creatures; that when he clearly understands this, his trade becomes raised above a mere minister to his acquisitiveness, and is dignified by moral purpose; and that in following it under these convictions he is elevated by the exercise of his moral sentiments, above the man who looks no further than from his work to his wages, or from his capital to his per-centage of profit.

It should be mentioned that this Report contains merely a faint outline of the examinations, which occupied in all eight hours and a half; but, as nearly as possible, the substance of the answers of the children is given, without attempting to use the precise words in which they were conveyed. Only the general outline of subjects was pre-arranged, and not the particular questions, many of which were suggested by the answers given by the children. The mode in which these answers were given was quite different from that which is usual, where they have been taught their answers by rote. They were given by the children in their own modes of expression, the words and ideas rising extempore—their expression was consequently always thoughtful, and the answers were sometimes given after consultation among themselves. Their happy, intelligent, and thoughtful appearance, was remarked by the audience.

At the close of the examination Mr Simpson moved a vote of thanks to the Teachers, which was carried by acclamation.

SECOND ANNUAL REPORT

OF THE

WILLIAMS SECULAR SCHOOL.

Man is approaching a more complete fulfilment of that great and sacred mission which he has to perform in this world. His reason being created after the image of God, he has to use it to discover the laws by which the Almighty governs his Creation; and by making these laws his standard of action, to conquer Nature to his use—himself a Divine instrument. Science discovers these laws of power, motion, and transformation; industry applies them to the raw matter which the earth yields us in abundance, but which becomes valuable only by knowledge; art teaches us the immutable laws of beauty and symmetry, and gives to our productions forms in accordance with them.

Speech of Prince Albert at the Mansion House.—March 21, 1850.

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